

#1 $\frac{4}{9}$ equivalent $\sqrt{\frac{16}{81}}$

#2. (a) $\sqrt{\frac{4}{169}}$ (b) None

#3. $\sqrt[2]{30}$ $\sqrt[3]{3}$ $\sqrt[2]{7}$ $\sqrt[5]{5}$ $\sqrt[2]{13}$
 $\sqrt{30 \times 2 \times 2}$ $\sqrt{3 \times 3 \times 3}$ $\sqrt{7 \times 2 \times 2}$ $\sqrt{5 \times 5 \times 5}$ $\sqrt{13 \times 2 \times 2}$
 $\sqrt{120}$ $\sqrt{27}$ $\sqrt{28}$ $\sqrt{125}$ $\sqrt{52}$
 $11 \notin 12$ $5 \notin 6$ $5 \notin 6$ $11 \notin 12$ $7 \notin 8$

= $5\sqrt{5}$, $2\sqrt{30}$, $2\sqrt{13}$, $2\sqrt{7}$, $3\sqrt{3}$

#4. (a) $\sqrt{56}$ (b) $\sqrt[3]{6000}$

$\sqrt{(2 \times 2) \times 2 \times 7}$ $\sqrt[3]{(2 \times 2 \times 2) \times 2 \times 3 \times (5 \times 5 \times 5)}$
 = $2\sqrt{14}$ $2 \times 5 \sqrt{2 \times 3}$
 = $10\sqrt{6}$

#4. (a) $\sqrt{56}$ (b) $\sqrt[3]{6000}$
 $\sqrt{(2 \times 2) \times 2 \times 7}$ $\sqrt[3]{(2 \times 2 \times 2) \times 2 \times 3 \times 5 \times 5 \times 5}$
 $= 2\sqrt{14}$ $2 \times 5 \sqrt[3]{2 \times 3}$
 $= 10\sqrt[3]{6}$

(c) $\sqrt[5]{64}$
 $\sqrt[5]{(2 \times 2 \times 2 \times 2 \times 2) \times 2}$
 $2\sqrt[5]{2}$

(d) $\sqrt{48}$
 $\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3}$
 $2 \times 2 \sqrt{3}$
 $4\sqrt{3}$

5. a) $\sqrt{3}$ already entire radical is

b) $4\sqrt{10}$

$$\sqrt{10 \cdot 4 \cdot 4}$$

$$\sqrt{160}$$

c) $-2\sqrt{14}$

$$-\sqrt{14 \cdot 2 \cdot 2}$$

$$-\sqrt{56}$$

6. $\sqrt{23625} = \sqrt{3 \cdot 3 \cdot 3 \cdot 5 \cdot 5 \cdot 5 \cdot 7}$

$$3 \times 5 \sqrt{7}$$

$$15\sqrt{7}$$

7. $c^2 = a^2 + b^2$

$$c^2 = 7^2 + 8^2$$

$$c^2 = 49 + 64$$

$$c^2 = 113$$

$$c = \sqrt{113}$$

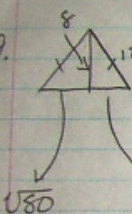
8.

$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 c^2 &= 6^2 + 2^2 \\
 c^2 &= 36 + 4 \\
 c^2 &= 40 \\
 c &= \sqrt{40}
 \end{aligned}$$

$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 c^2 &= 3^2 + 1^2 \\
 c^2 &= 9 + 1 \\
 c^2 &= 10 \\
 c &= \sqrt{10}
 \end{aligned}$$

The large Δ
is 2 times
larger, therefore
 $\sqrt{40} = 2\sqrt{10}$

9.



$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 12^2 &= 8^2 + b^2 \\
 144 &= 64 + b^2 \\
 144 - 64 &= \frac{b^2}{\sqrt{80} = \sqrt{b^2}} \\
 \sqrt{80} &= b
 \end{aligned}$$

$$\begin{aligned}
 &\sqrt{80} + \sqrt{80} \\
 &2\sqrt{80} \\
 &2\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5} \\
 &2 \times 2 \times 2 \times \sqrt{5} \\
 &8\sqrt{5}
 \end{aligned}$$

10. Surface Area to Volume.

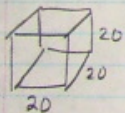
a) $\frac{5400}{6} = 900 \leftarrow \text{Area of each side}$

$\sqrt{900} = \sqrt{2 \cdot 2 \cdot 5 \cdot 5 \cdot 3 \cdot 3}$
 $= 2 \times 5 \times 3$
 $= 30 \text{ Length of side}$

$V = L \times W \times H$
 $= 30 \times 30 \times 30$
 $= 27000$

10 b) Volume to Surface Area

$$\begin{aligned} \sqrt[3]{8000} &= \sqrt[3]{(2 \cdot 2 \cdot 2) \cdot (2 \cdot 2 \cdot 2) \cdot (5 \cdot 5 \cdot 5)} \\ &= 2 \times 2 \times 5 \\ &= 20 \quad \text{Length of each side} \end{aligned}$$



$$\begin{aligned} \text{Area} &= L \times W \\ &= 20 \times 20 \\ &= 400 \\ &\quad \times 6 \text{ sides} \\ &= 2400 \end{aligned}$$

same
↓ ↓ ↓

(c) $A = L \times W$ same

$$\sqrt{3600}$$

$$\sqrt{(2 \times 2) \times (2 \times 2) \times (3 \times 3) \times (5 \times 5)}$$

$$2 \times 2 \times 3 \times 5$$

$$= 60 \text{ cm}$$

(d) $42 \overline{) 1764} \begin{array}{r} 42 \\ 1764 \\ \underline{1680} \\ 84 \\ \underline{84} \\ 0 \end{array}$

$$\sqrt{1764}$$

$$\sqrt{(2 \times 2) \times (3 \times 3) \times (7 \times 7)}$$

$$2 \times 3 \times 7$$

$$42 + 42 + 42 + 42 = 168$$

LCM

11. Jennifer 8 - $2 \times 2 \times 2 = 2^3$
 Bailey 14 - $2 \times 7 = 2^1 \times 7^1$

$$2^3 \times 7^1$$

$$8 \times 7$$

$$= 56 \text{ days will pass.}$$

12

1?

LCM

8

36

GCF

Getting smaller!

8 - $2 \times 2 \times 2$

36 - $2 \times 2 \times 3 \times 3$

$2 \times 2 = 4$ in

36 in

13. (a) $220 = 2 \times 2 \times 5 \times 11$
 $484 = 2 \times 2 \times 11 \times 11$
 $988 = 2 \times 2 \times 13 \times 19$
 $2 \times 2 = 4$

(b) $126 = 2 \times 3 \times 3 \times 7$
 $546 = 2 \times 3 \times 7 \times 13$
 $714 = 2 \times 3 \times 7 \times 17$
 $2 \times 3 \times 7$
 $= 42$

$$14. (a) \begin{aligned} 18 &= 2 \times 3 \times 3 = 2^1 \times 3^2 \\ 25 &= 5 \times 5 = 5^2 \\ 30 &= 2 \times 3 \times 5 = 2^1 \times 3^1 \times 5^1 \end{aligned}$$

$$\begin{aligned} &2^1 \times 3^2 \times 5^2 \\ &2 \times 9 \times 25 \\ &= 450 \end{aligned}$$

$$(b) \begin{aligned} 120 &= 2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3^1 \times 5^1 \\ 960 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 2^6 \times 3^1 \times 5^1 \\ 1400 &= 2 \times 2 \times 2 \times 5 \times 5 \times 7 = 2^3 \times 5^2 \times 7^1 \end{aligned}$$

$$\begin{aligned} &2^6 \times 3^1 \times 5^2 \times 7^1 \\ &= 64 \times 3 \times 25 \times 7 \\ &= 33600 \end{aligned}$$